Data Management

Chapter Highlights

A standardized methodology was adopted to insure consistent data collection and storage.

Data collected were stored in a database that is compatible with the North American Constructed Wetland Database.

Site Data Sheets were designed with guidance from the Task Force members. These Site Data Sheets were used during site visits to provide a consistent means of evaluating each wetland.

Before any data were collected, the Task Force members and project team assembled a standardized method for data collection and storage. The data management system included standardized methods to analyze the evaluation criteria, a Site Data Sheet to consistently record data and the development of a database for storing the final data.

Database

In the early 1990's the USEPA funded the development of the North American Constructed Wetlands Database (NADB). The NADB contains the most comprehensive inventory of treatment wetland performance and design data currently available. This inventory contains information for both natural and constructed wetlands used to treat wastewater in the United States and Canada. Version 1 of the NADB contained information on 179 sites. Version 2 of the NADB was updated to a total of 257 sites. Currently, the database is being updated by Humboldt State University and will be provided in a web-based interface.

The NADB is divided into the following twelve database files:

Sites

Fields are provided to record general site information, such as EPA region, state, and community. A checklist is included to indicate the inclusion or exclusion of parameters that are recorded in following database files.

Systems

This section contains an overall description of the wetland site, including such items and contributing population, number of cells, area, costs and waste source.

Cells

The wetland system is subdivided into cells. This file records information for each cell, such as area, length and width, vegetation type, slope, island, deep zones and water depth.

Permits

This field allows the entry of permit limitations. Entries can be made for 36 parameters, including permitted flow, BOD, COD, TSS TDS, temperature, nitrogen, phosphorous, total coliforms, and pH.

People

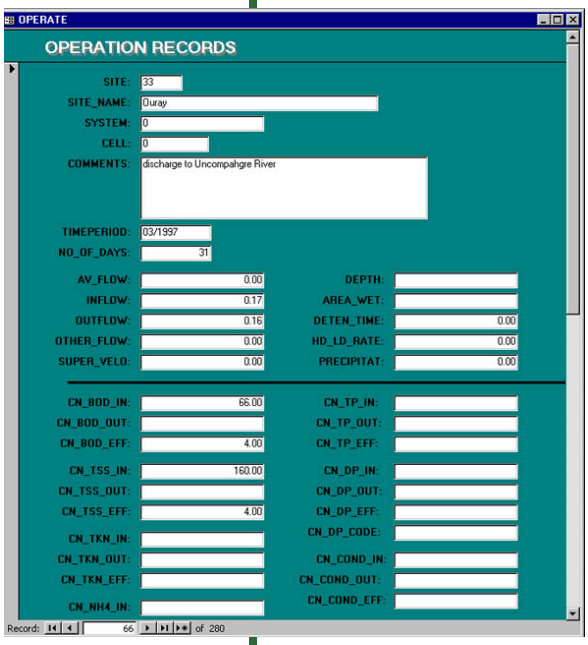
Information is recorded for contact people, with address, phone and fax information. The contact persons role in the wetland is also included.

Literature

Citations are recorded for any publications that have been written about the site.

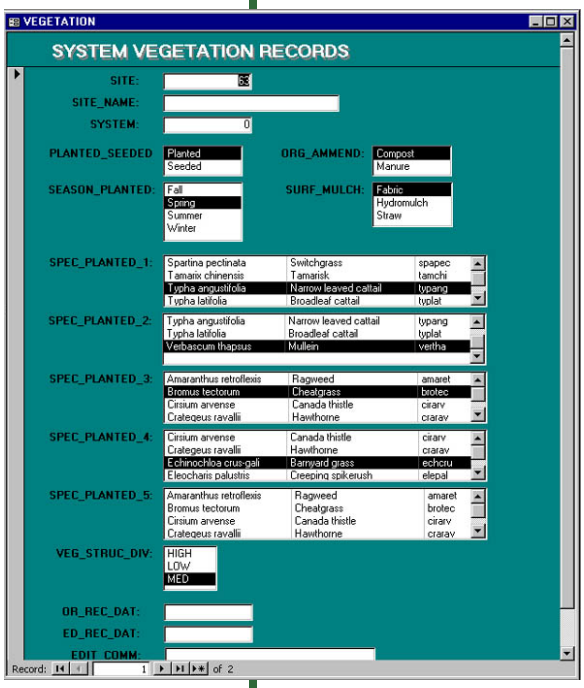
Operations

This database file contains the operational data for each site. Available performance data for influent and effluent water quality are recorded here. A screen capture of this form is shown to the right.



Vegetation

Data can be entered for each cell of the wetland system to indicate plant groups and subgroups. Space is also available to enter decomposition rates, basal area, chlorophyll a, diversity and density. The graphic to the right is a screen capture of the database form used to enter system vegetation records.



Wildlife

Information can be entered for amphibians, benthos, mammals and avifauna. Topics available include birth and death rates, egg clutch size, breeding pair density, and population net growth.

Metals / Organics

The NADB contains metals and organics data collected from 26 sites. Samples were taken from the surface water, sediments, and tissue.

Biomonitoring

This database file contains data used to determine the effects of treatment wetlands on “whole-effluent” toxicity. Whole-effluent toxicity is determined by conducting tests on organisms to determine acute and chronic toxicity.

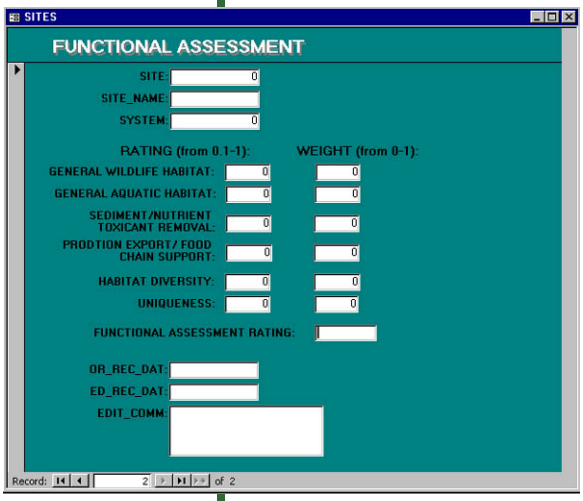
Human Use

Data on the human uses of treatment wetlands is recorded

in this field. Parameters recorded in this field include money spent, type of activity, and number of human uses per year.

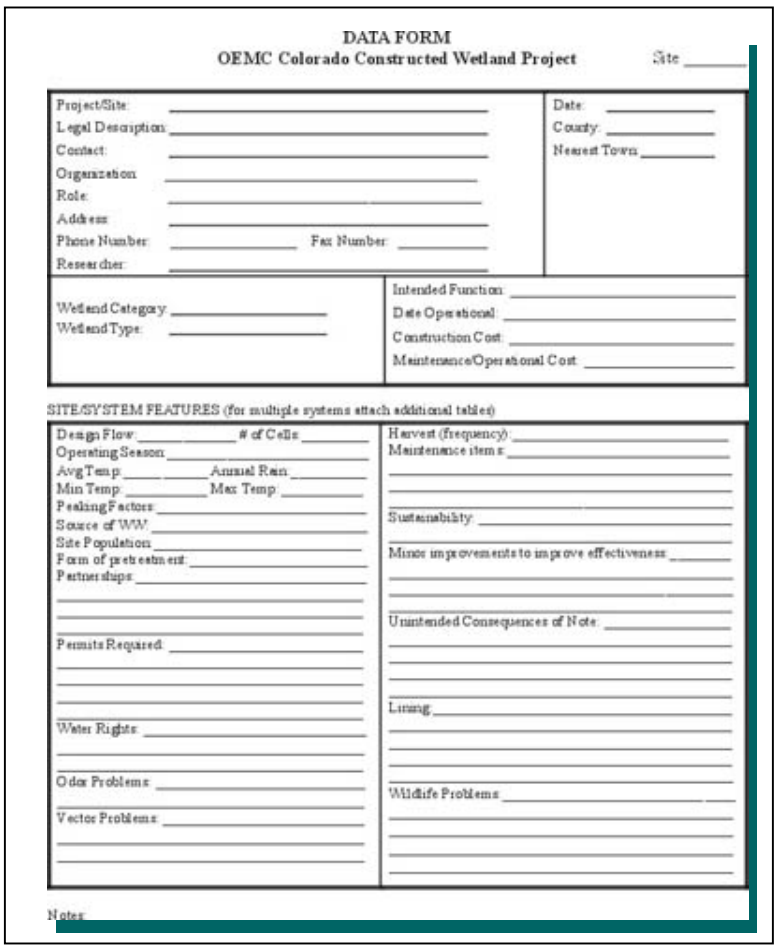
The NADB provides a structure to record all available treatment wetland data. The categories available in this database are extensive. The majority of wetlands will have data available for only a portion of the developed fields.

A primary goal of the Colorado Constructed Treatment Wetland Inventory was the inclusion data on Colorado treatment wetlands into the NADB. To this end, data collected in this study were entered into a database that is compatible with the NADB.



Site Data Sheets

The project team designed site Data Sheets (SDS), with guidance from the Task Force members. Each section in the SDS was designed to coordinate with tables in the NADB. Site visits were structured around the collection of data on the SDS. The SDS served as a checklist to insure a consistent evaluation of each wetland. Field notes were recorded on the SDS for downloading into the database.



DATA FORM
OEMC Colorado Constructed Wetland Project
Site

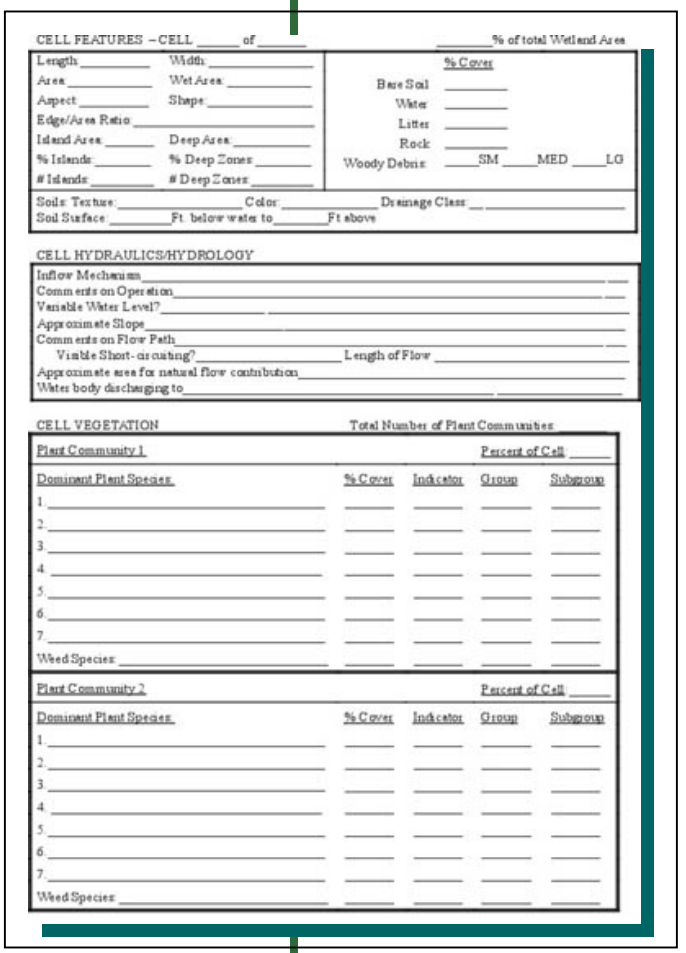
Project/Site:
Legal Description:
Contact:
Organization:
Role:
Address:
Phone Number: Fax Number:
Researcher:
Date:
County:
Nearest Town:

Wetland Category:
Wetland Type:
Intended Function:
Date Operational:
Construction Cost:
Maintenance/Operational Cost:

SITE/SYSTEM FEATURES (for multiple systems attach additional tables)

Design Flow: # of Cells:
Operating Season:
Avg Temp: Annual Rain:
Min Temp: Max Temp:
Peaking Factors:
Source of WW:
Site Population:
Form of pretreatment:
Partnerships:
Permits Required:
Water Rights:
Odor Problems:
Vector Problems:
Harvest (frequency):
Maintenance items:
Sustainability:
Minor improvements to improve effectiveness:
Unintended Consequences of Note:
Liming:
Wildlife Problems:

Notes:



CELL FEATURES – CELL ____ of ____ ____% of total Wetland Area

Length: Width:
Area: Wet Area:
Aspect: Shape:
Edge/Area Ratio:
Island Area: Deep Area:
% Islands: % Deep Zones:
# Islands: # Deep Zones:

% Cover
Bare Soil
Water
Litter
Rock
Woody Debris: ____SM ____MED ____LG

Soils: Texture: Color: Drainage Class:
Soil Surface: Ft. below water to Ft. above

CELL HYDRAULICS/HYDROLOGY

Inflow Mechanism
Comments on Operation
Variable Water Level?
Approximate Slope
Comments on Flow Path
Visible Short-circuiting? Length of Flow
Approximate area for natural flow contribution
Water body discharging to

CELL VEGETATION Total Number of Plant Communities:

Plant Community 1 Percent of Cell: ____

Dominant Plant Species:	% Cover	Indicator	Group	Subgroup
1.				
2.				
3.				
4.				
5.				
6.				
7.				
Weed Species:				

Plant Community 2 Percent of Cell: ____

Dominant Plant Species:	% Cover	Indicator	Group	Subgroup
1.				
2.				
3.				
4.				
5.				
6.				
7.				
Weed Species:				

WETLAND VEGETATION INFORMATION

Planted or Seeded: Planted - Seeded
Species Planted:
Time of Year:
Surface Mulch: Straw - Fabric - Hydromulch
Organic Amendment: Compost - Manure
Vegetative Structural Diversity: _____Low _____Med _____High
Wildlife Habitat Value: _____Low _____Med _____High

WILDLIFE SPECIES

Species Observed	Species For which Habitat Available

WETLAND BIODIVERSITY FUNCTIONAL ASSESSMENT

Function and Value Variables	Functional Points (0.1 – 1)	Possible Points
General Wildlife Habitat		
General Fish/aquatic Habitat		
Sediment / Nutrient Toxicant Removal		
Production Export / Food Chain Support		
Habitat Diversity		
Uniqueness		
Total Points		
Overall Rating (1-4)		

HUMAN USE

Use Category_____ Use Days_____ $ Spent_____
Aesthetic Value _____ Low _____ Med_____ High
Educational Use _____ Low _____ Med_____ High

LITERATURE

Year and Citation_____
_____
_____

Notes

SITE FEATURE EFFECTIVENESS

Highly Effective Features	Sporadically Effective	Rarely Effective Features	Ineffective Features

OVERALL EFFECTIVENESS/COMMENTS_____
_____
_____
_____
_____

ENERGY CONSERVATION

KW used (from billing records)	Amount and Type of Energy Conserved
Construction	
Maintenance and operations	

WATER QUALITY DATA COLLECTED

To be included in attached file
BOD
COD
TSS
TKN
N_NH4
N_NO3
N_TOT
P_DSV
P_TOT
DO
F_COLIF
E_COLI
TDS
TURB
PH

Notes